

CMSC 491/691
Knowledge Graphs
Administrivia

Fall 2022

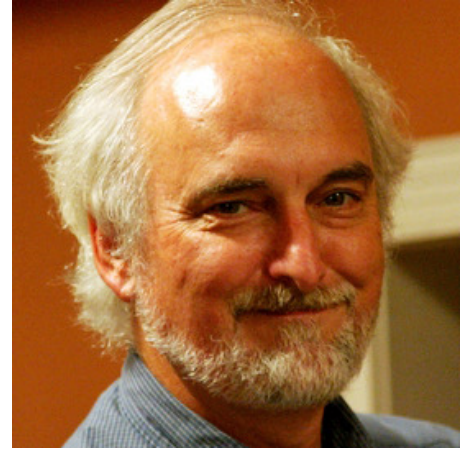
Course Objectives

- Understand concepts, motivation, goals underlying knowledge graphs (KGs)
- Gain familiarity with popular property graphs like Neo4j
- In-depth understanding of Semantic Web (SW) languages & tools
- Ability to create & use ontologies & schemas using SW languages
- Familiarity with major usecases, e.g., Wikidata, Dbpedia, Google knowledge graph, schema.org
- Create, consume and manipulate KG data
- Ability to define and implement a KG project

Grading

- Grades will be based on homework, exams, and a project
- 5-6 short **homework** assignments
 - Submissions will be via GitHub classroom
- **Project** (individual or group) with *proposal* and *final report*
- **Midterm**, comprehensive **final**, possible **quizzes** on readings
- Probable weighting: 40% homework, 25% project, 15% midterm, 20% final

Instructor availability



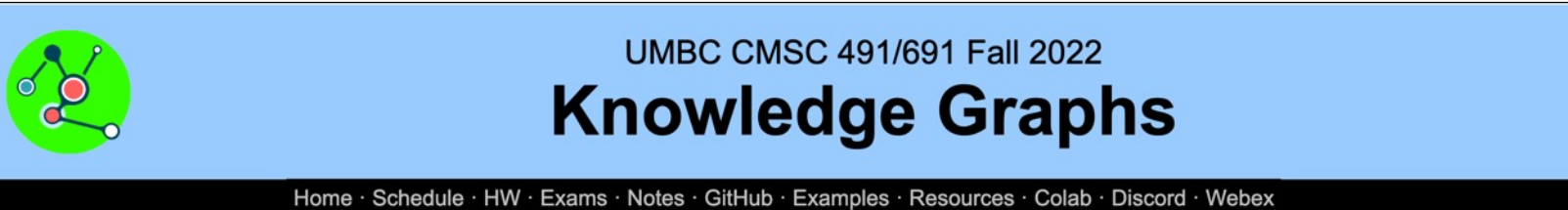
Instructor: Professor [Tim Finin](#)

- Pronounced like *fine + in*, not like *fin + in*
- Office: ITE329, finin@umbc.edu
- Office hours: TBD
- Direct general questions (i.e., those other students may also have and a Web search can't answer) to our Discord server first
- We'll try to respond to postings on Discord or private email messages within 24 hours

Programming, etc.

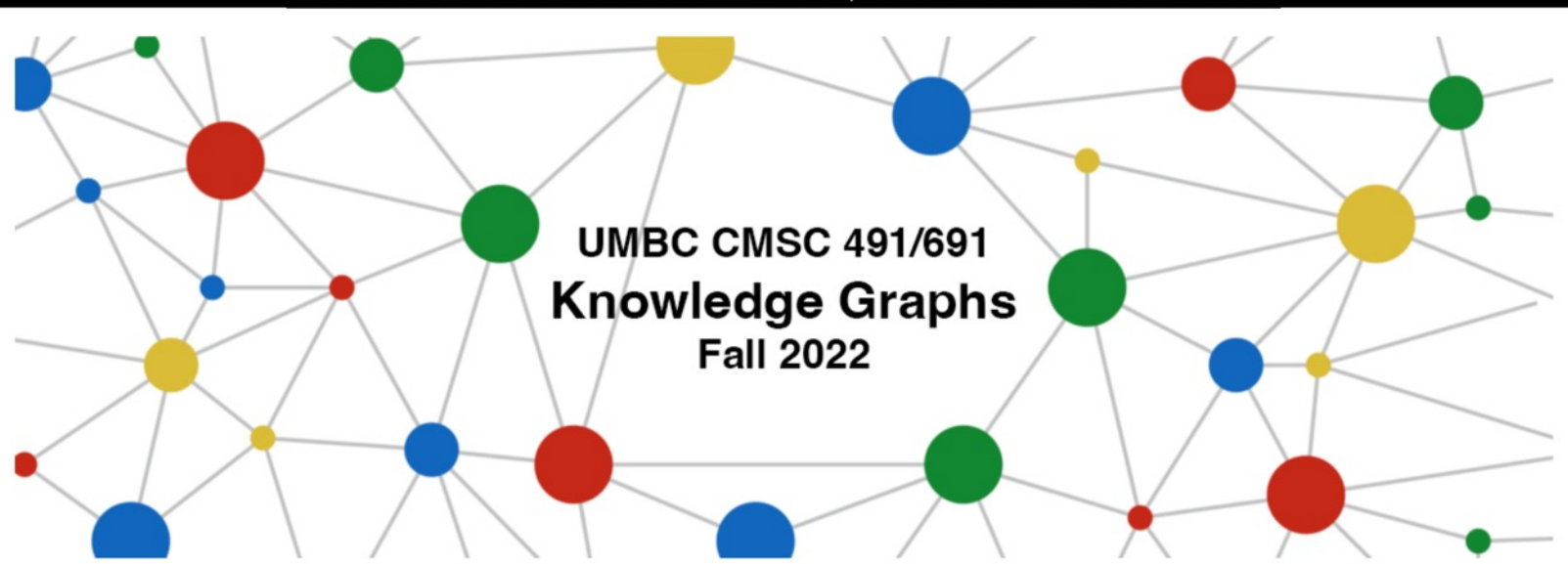
- Homework requires using various systems/tools
- We'll use GitHub Classroom for starter code & submissions
- Some will require programming; some require Python, others can be done in any language (e.g., Java) but Python preferred
- Examples demonstrated in Unix (Linux or MAC OS X); most should also work on Windows
- Installing a web server on your computer may be useful

Web Site: <http://bit.ly/691f22>



UMBC CMSC 491/691 Fall 2022
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Home · Schedule · HW · Exams · Notes · GitHub · Examples · Resources · Colab · Discord · Webex



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Knowledge Graph News

- [IKEA's Knowledge Graph and Why It Has Three Layers](#)
- [From Knowledge Graphs To Knowledge Portals](#)
- [MITRE D3FEND cybersecurity knowledge graph](#)
- [Pulling Turtle RDF triples from the Google Knowledge Graph](#)
- [How semantic-based knowledge graphs accelerate the value of data lakes](#)

CMSC 491/691 is a special topics course offered at UMBC in the Fall of 2022. It meets on Tuesdays and Thursdays from 5:30-6:45pm in Engineering 022. It is available to advanced undergraduates and graduate students. The course will cover the topic of graph databases and knowledge graphs with a focus on Semantic Web technologies, provide an overview of the underlying theory and technology, cover existing tools and practices, and highlight current and potential applications.

Graph databases are databases that use a graph structure to represent and store data. We will use the term **knowledge graph** for graph databases with rich semantic schemas that typically define an ontology or taxonomy of types, properties and relations and include semantic